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15 May 2013

Plains Exploration & Production Company
5640 S. Fairfax Avenue
Los Angeles, CA 90056

RE: May 2013 Abandoned Well Testing Report – Inglewood Oil Field

Dear Sir:

On May 13 GSA personnel advanced eleven (11) soil probes to depths of 4.0' at locations selected by Client. Sampling locations were denoted with laboratory numbers, well names/Grid No. for the eleven (11) samples (Table 1).

Testing Description

Soil gas samples were collected by driving a slide hammer driven soil probe, ½" diameter, into the soil. Soil gases were obtained from the soil probe hole using a gas tight pump affixed to a 1/8" diameter nylon tube. The tube was lowered downhole to the sampling interval and a gaseous sample withdrawn. A 20cc sample of soil gas was collected and stored by water displacement in a silicone rubber stoppered glass vacutainer. There is no leakage of ambient atmosphere using this procedure. Samples were analyzed for C1-C7 hydrocarbons.

All samples are transported under chain-of-custody to the laboratory. Sample collection was carried out by a California Registered Environmental Assessor (REA No. 1680) with over thirty (30) years experience in completing combustible gas assessments throughout Southern California.

The analytical technique for the C1-C7 speciation is method ASTM D1945 (mod). The gas chromatographic column is 1/8" x 8' stainless steel packed with 100 - 120 mesh activated alumina. The carrier gas is chromatographic grade nitrogen at a flow rate of 30 cc/min. Detection is by means of flame ionization. The output signal is quantified and recorded with an HP3390A electronic integrator. Standards are manufactured by Scott Specialty Gases with an accuracy of ±2.0%.

Laboratory analyses for hydrogen sulfide were conducted. A hand-held Bacharach Model 505 "Sniffer" was used to monitor for the presence of H2S at each sampling location. Sensitivity ranges from 0 to 100 ppm (v/v) of H2S with a minimum detectable concentrations of 1.0 ppm (v/v). The meter was calibrated daily.

Issue Background

Background soil gas methane concentration throughout southern California are typically 50 parts per million by volume (ppmv) or less. Concentrations in excess of this level may be classified as anomalous. Individual cities and counties throughout southern California define soil gas methane anomalies and any required mitigation measures differently. In the City of Los Angeles, for example, mitigation is mandatory for all property within an oil field boundary that will be developed with overlying structures independent of soil gas methane concentration.

Soil gas methane at the Inglewood Oil Field is regulated by the City of Inglewood and the Los Angeles County Department of Public Works, Environmental Affairs (LACDPW). While we are not aware of any specific codes regulating soil gas methane within the City of Inglewood, the LACDPW has provisions for regulating methane in its Building Code. County codes state that for land within 200' of an active, abandoned or idle oil or gas well, mitigation is required along with the preparation of a soil gas investigation that may result in additional mitigation. The code does not establish a threshold level that requires mitigation, however.

Regulations prepared by the LACDPW apply to proposed buildings in and around oil wells, and do not pertain to soil gas methane detected around existing structures. In the event elevated concentrations of methane gas are detected at a property with existing structures, the LACDPW typically requires proof that possible explosive levels of methane gas are not accumulating in the first floor, subterranean rooms or utility vaults. Possible explosive levels are defined as 25% of the Lower Explosive Level ("LEL") of methane gas, or approximately 12,500 parts per million per volume (ppmv). If monitoring does not show the accumulation of elevated concentrations of methane gas, the LACDPW does not require mitigation.

Methane gas found in occupied structures is regulated by the California Administrative Code. When gas is found at greater than 25% LEL (1.25% by volume) in a structure, the building is in violation of California Administrative Code Title 27 §20919.5(a)(1) and §20921(a)(1): notification of government agencies and mitigation must be taken per §20919(c) and §20937(all).

The South Coast Air Quality Management District (SCAQMD) Rule 1150.1 regulates methane emissions from soils, particularly landfills, and requires mitigation measures to be implemented for detected surface air emissions greater than or equal to 500 ppm (equal to 1% LEL). Mitigation measures are mandated in order to restrict the venting of soil gas methane into the atmosphere.

Mitigation measures typically intensify as methane concentrations increase. Other jurisdictions are different, though somewhat similar, in ascribing methane concentrations to specific required mitigation measures.

As a general rule, soil gas methane within an oil field environment may be the result of natural seepage, leaking wells or pipelines and bacterial decomposition of organic matter. In our experience, organic matter that could lead to soil gas methane readings includes municipal trash, sewage waste, peat, or crude oil or crude oil by-products.

While some oil fields, typically those containing unconsolidated soils, are known to contain methane gas seepage from the underlying oil field, other fields, typically those containing consolidated soils or "tight fields" do not contain natural seepage. Natural seepage is well known in the Brea-Olinda Oil Field in the city of Brea, as well as fields within the city of Newport Beach and the Salt Lake Oil Field of Los Angeles which underlies the La Brea Tar Pits. The Inglewood Oil Field, on the other hand, is a tight field and void of natural seepage. Mitigation measures in oil fields known to contain natural seepage are far more intensive tan those measures ascribed to tight oil fields.

Analysis of Inglewood Oil Field

Analytical soil gas data were evaluated in the vicinity of existing wells in the Inglewood Oil Field on May 13. Soil gas methane concentrations found at the oil field were indicative of background levels. Methane found at the Inglewood Oil Field has low pore pressure and lacks appreciable migration, even under ideal conditions.

Of the eleven (11) samples conducted, none showed soil gas methane readings in excess of 50 ppmv, which is considered background. The highest reading of 43.2 ppmv was significantly below levels of possible concern. Given the fact there are no structures in the immediate vicinity of where the reading was taken, no immediate threat to the public or environment is posed by this reading. Hydrogen sulfide has not been detected in the analysis of surficial soils of the Inglewood Oil Field. Hydrogen sulfide concentrations in air are discussed in Immediate Danger to Life and Health ("IDLH") and California Code of Regulations ("CCR") Permissible Exposure Limits ("PEL"). Values of 300 and 10 ppm, respectively, are defined. Based on these results, hydrogen sulfide is not a gas of concern on the subject site.

Summary

Based on a review of all available soil gas methane data for the Inglewood Oil Field, we found no evidence of leaking wells, pipelines or natural seepage.

Sincerely yours,

Louis J. Pandolfi

Louis J. Pandolfi
President

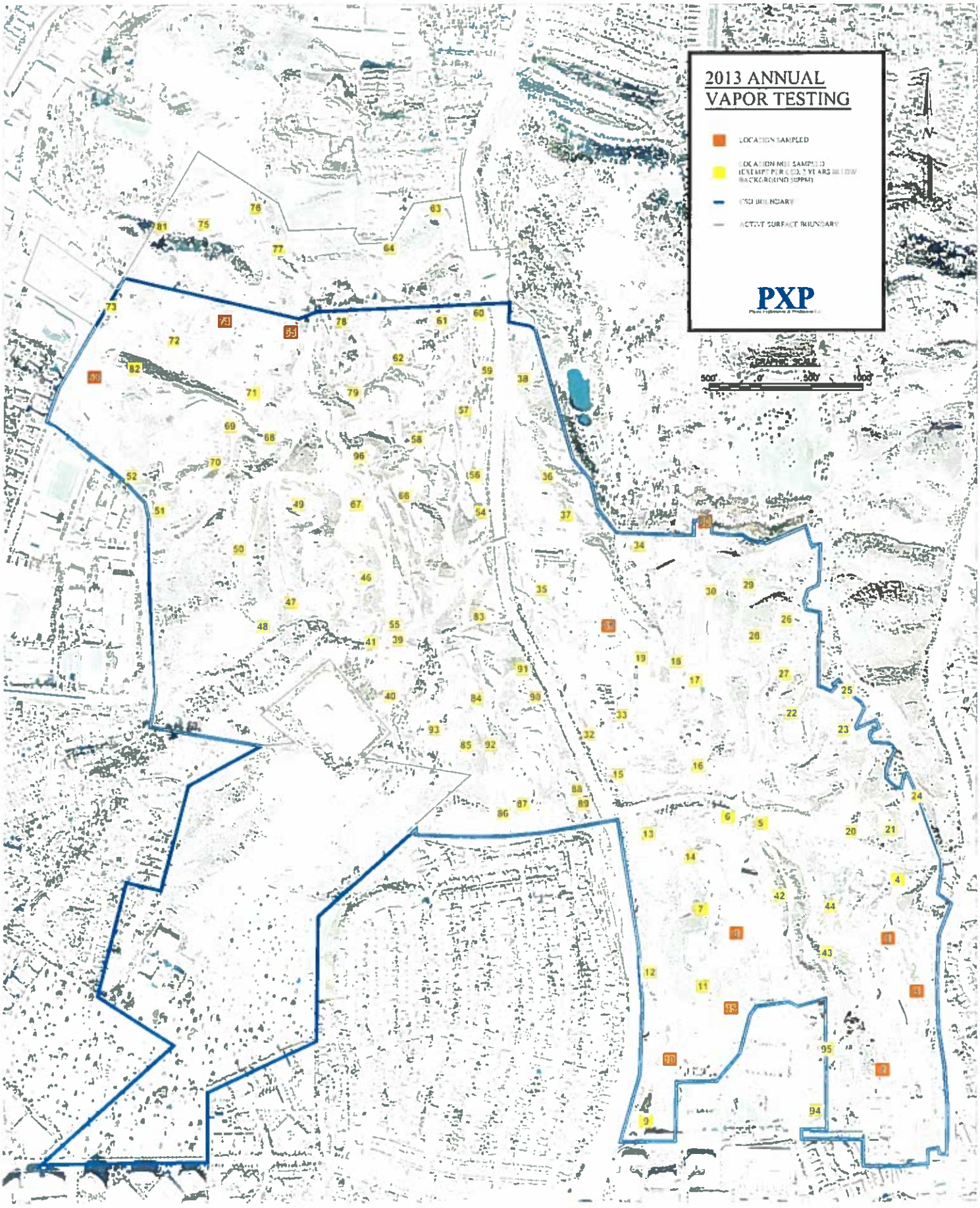
2013 ANNUAL
VAPOR TESTING
LOCATION SAMPLED
LOCATION NOT SAMPLED
(EXEMPT PER CCR 2 YEARS BELOW
BACKGROUND SEPAH)
CSU BOUNDARY
ACTIVE SURFACE BOUNDARY
PXP
GRAPHIC SCALE
500'
0
500'
1000'
N

TABLE 1: C1-C7 HYDROCARBONS IN SOIL PROBE GAS (PPM V/V)

Soil Probe #	1	2	3	4	5	6	7	8
Map ID #	31	80	65	74	53	8	45	10
	Well Number							
Hydrocarbon	LAI 1-8	BC-18	T-VIC 3	T-VIC 42	VICKERS 2-37	LAI 1-2	LAI 1-188	LAI 1-258
Methane	13.8	14.1	18.2	6.9	12.8	7.2	43.2	37.4
Ethane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Propane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Propylene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Iso-butane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
N-butane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyclopentane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Iso-pentane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
N-pentane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyclohexane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Iso-hexane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
N-hexane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Iso-heptane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
N-heptane	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

TABLE 1: C1-C7 HYDROCARBONS IN SOIL PROBE GAS (PPM V/V)

Soil Probe #	9	10	11					
Map ID #	2	3	1					
	Well Number							
Hydrocarbon	STK-11	STK-3	STK-27					
Methane	11.3	10.2	5.5					
Ethane	<0.2	<0.2	<0.2					
Ethylene	<0.2	<0.2	<0.2					
Propane	<0.2	<0.2	<0.2					
Propylene	<0.2	<0.2	<0.2					
Iso-butane	<0.2	<0.2	<0.2					
N-butane	<0.2	<0.2	<0.2					
Cyclopentane	<0.2	<0.2	<0.2					
Iso-pentane	<0.2	<0.2	<0.2					
N-pentane	<0.2	<0.2	<0.2					
Cyclohexane	<0.2	<0.2	<0.2					
Iso-hexane	<0.2	<0.2	<0.2					
N-hexane	<0.2	<0.2	<0.2					
Iso-heptane	<0.2	<0.2	<0.2					
N-heptane	<0.2	<0.2	<0.2					